

PEST MANAGEMENT SERIES



INTEGRATED PEST MANAGEMENT ON CALIFORNIA PARKLANDS

Number 3

PREVENTION AND CONTROL OF CARPENTER BEES AND HONEY BEES IN CALIFORNIA PARKLANDS

Pest Management Analysis and Planning Program

STATE OF CALIFORNIA
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**PREVENTION AND CONTROL OF
CARPENTER BEES
AND
HONEY BEES
IN CALIFORNIA PARKLANDS**

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Pest Management Series

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Report to California Department of Parks and Recreation

April, 1988

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ACKNOWLEDGEMENTS

A special thanks is due the following:

Mark Pepple for extensive review and valuable suggestions.

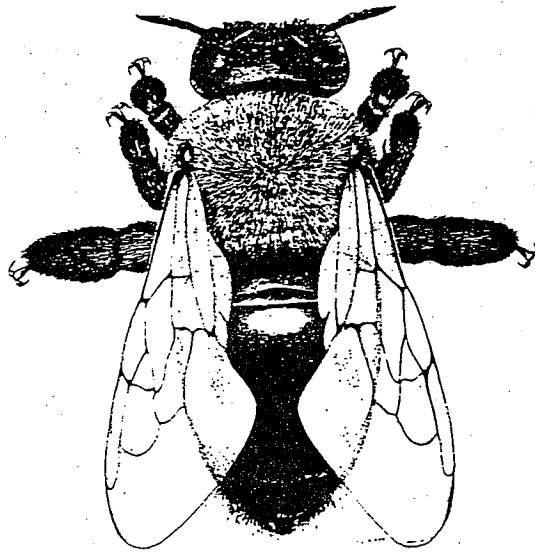
Linda Heath for contributions concerning artwork, layout and style.

Eric Mussen (University of California) and Pat Paswater (California Department of Food and Agriculture) for technical review.

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CARPENTER BEES

DAMAGE

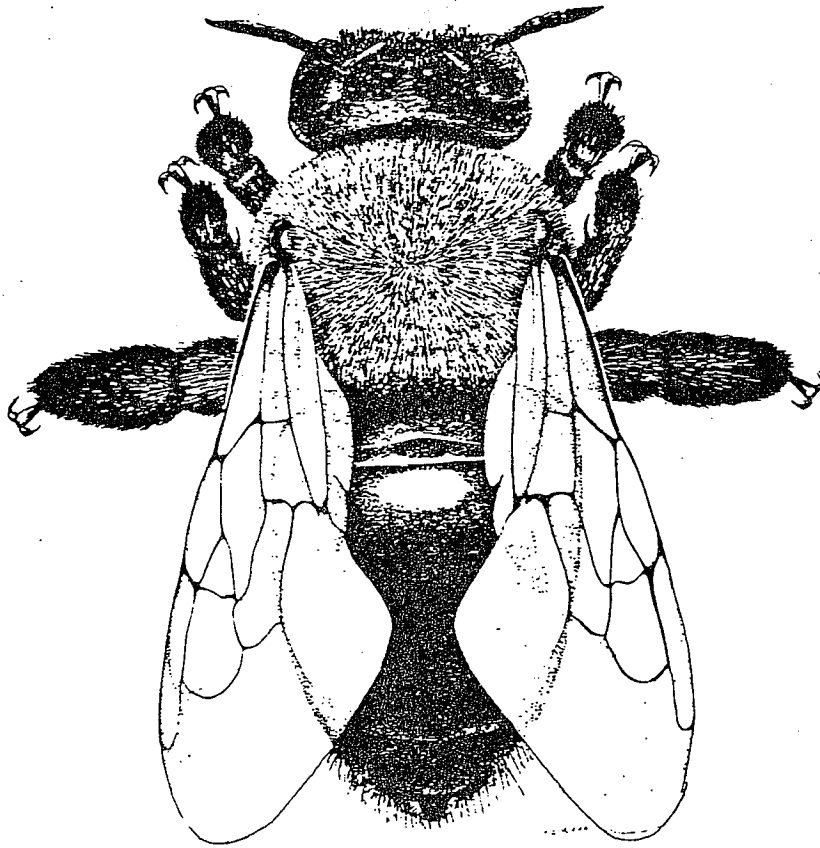
The order hymenoptera contains bees and wasps that can be a problem in wood structures. Carpenter bees cause damage by boring into wood for nesting purposes. This can weaken structural timbers or, in the case of water tanks, cause major damage. Redwood and Douglas fir are often attacked, but other types of wood may be attacked if they are the only available nesting material. Slanted or horizontal surfaces are usually preferred for the initial attack.

BIOLOGY

Carpenter bees resemble bumble bees, but are not in the same family. Carpenter bees are approximately four-fifths of an inch long, and usually metallic blue-black in color, with a green or purplish hue (Figure 1). In some species, the males are a buff or pale yellow color. The upper surface of the abdomen of the carpenter bee is hairless, whereas the bumblebee has hair on the upper abdomen. Carpenter bees, unlike honey bees, are not social insects. The adults overwinter in old galleries, and emerge in the spring to mate. New galleries are built or old ones are extended, and eggs are laid within chambers. New adults emerge in late summer. The males have no stinger, but may fly around the head of someone who enters their territory. Females have a stinger, but must be provoked directly before injecting a very painful venom.

Carpenter Bees

Adult Carpenter Bee
Note lack of hair on upper abdomen.



T. E. Wood, 1971
Courtesy of University of Maryland

Carpenter Bees

The entrance holes to the nest are approximately one half inch in diameter. New galleries may extend 1-12 inches into the wood, while reused galleries may be as long as 6-9 feet. The bees eat pollen and nectar, but not wood. The sawdust from their boring can be found on the ground outside the entrance. The tunnels usually begin at right angles to the grain, then turn to follow the grain, but the exact course of the tunnels depends on the shape and thickness of the wood. The tunnels bored along the grain remain equidistant from the outer surfaces.

There are three species of carpenter bees in the genus Xylocopa that attack structural wood in California. The mountain carpenter bee (Xylocopa tabaniformis orpifex) is the most damaging. The valley and California carpenter bees are of less importance.

MONITORING

Large bees appearing similar to carpenter bees, such as bumble bees, are common to many parkland settings. Bumble bee activity usually centers around plants away from structures. When there is activity of large bees seen frequently near structures, carpenter bee activity should be suspect. The large entrance hole (1/2 inch in diameter) is unlike signs of woodpecker or wood boring beetle activity. Sawdust collecting on the outside sills or siding also might indicate carpenter bees and the situation warrants a closer look for entrance holes. Painted, sealed, or varnished wood surfaces act as a deterrent to carpenter bees, so untreated wood might first be suspect for carpenter bee presence.

CONTROL

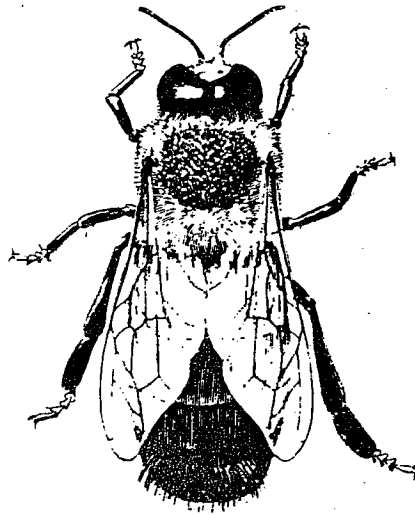
Carpenter bees and honey bees are killed by a variety of insecticides. Many of these materials carry warnings against using them near bees. A material must be used that is registered to kill bees. The local agricultural commissioner, pest control companies, and the University Cooperative Extension Service have information on those insecticides registered to use on bees that are pests.

The insecticide should be sprayed into the gallery hole. Several days later the entrance holes should be sealed with a wood or plastic plug. If the material has a long residual, the exterior of the infested wood can be sprayed to act as a repellent to prevent reinfestation. Even if the carpenter bees are killed and a repellent sprayed on, there is still the possibility of reinfestation in the following year.

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PREVENTION AND CONTROL OF HONEY BEES IN CALIFORNIA PARKLANDS



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April, 1988

HONEY BEES

DAMAGE

Though honey bees are not wood-boring insects, honey bees may use voids and spaces in structures as places to construct their nests. This presents two problems. Since bees manifest defensive behavior, a colony near a structure increases public exposure and the risk of persons being stung. Second, a nest within the wall can lead to seepage of moisture or honey into the interior of the structure.

BIOLOGY

Honey bees are social insects of the order Hymenoptera, and of the family Apidae. The colony consists of three types of bees: workers (females), drones (males), and a reproductive queen. The males' sole purpose is aerial mating with a virgin queen. Drones lack a stinger. The established colony population ranges from 10,000-50,000 workers. Once a colony has matured, new queens are reared, and the old queen leaves with about half of the adult bees to establish a new colony. This mobile group is called a swarm. Swarming is limited to the spring, with April being the peak month. If a swarm finds a suitable site, it begins the construction of a new nest. Buildings that were constructed before building codes and designs that maximized insulation have voids and spaces that are accessible and suitable for service as hive sites.

MONITORING

Honey bees are easily identified by most people, since they are very common and their coloration is distinctly different from most other types of commonly encountered bees. They are smaller than most bumble bees and wasps (approximately 1/2 inch long). The presence of honey bees around buildings should be investigated. They may be attracted to some food source, such as sweet liquids in trash cans. Honey bees can enter a structure through an opening with a diameter of 1/4 inch or more. Holes that exist in the exterior of the building that lead to interior voids should be suspect. Bee activity around these holes can be an indication of: 1) scout bees from a swarm inspecting the site, 2) possible interior colony development, or 3) robbing of honey from a colony that has died. Bee activity is greatest during the warmer parts of the day when temperatures exceed 55 degrees (F), so examinations should take place during these periods.

CONTROL

Physical exclusion is the best method for preventing colony development within structures. Structures that are well sealed provide no accessible nesting sites. Unfortunately, many historic structures are readily accessible to bees. Even after bees have been removed from structures, the remaining odor will attract other swarms. Some buildings with repeated bee problems have had window screening installed beneath the siding as the only method to prevent entry by swarms.

Honey Bees

If the swarm is detected early, the bees may be excluded from the structure or killed by a variety of pesticides. If an established colony is killed inside the wall, they may rot, creating a moisture or odor problem. If there has been extensive comb development within the walls, it may melt in hot weather without the cooling fanning of the workers, resulting in wax and honey seepage within the wall. In humid weather unprotected honey will absorb moisture, ferment, burst the cell cappings and cause seepage. Therefore, most control programs require opening of the wall to remove the bees and the comb. All potential entrance holes should be sealed up to the outside, because the residual odor of the beeswax will attract other bees.

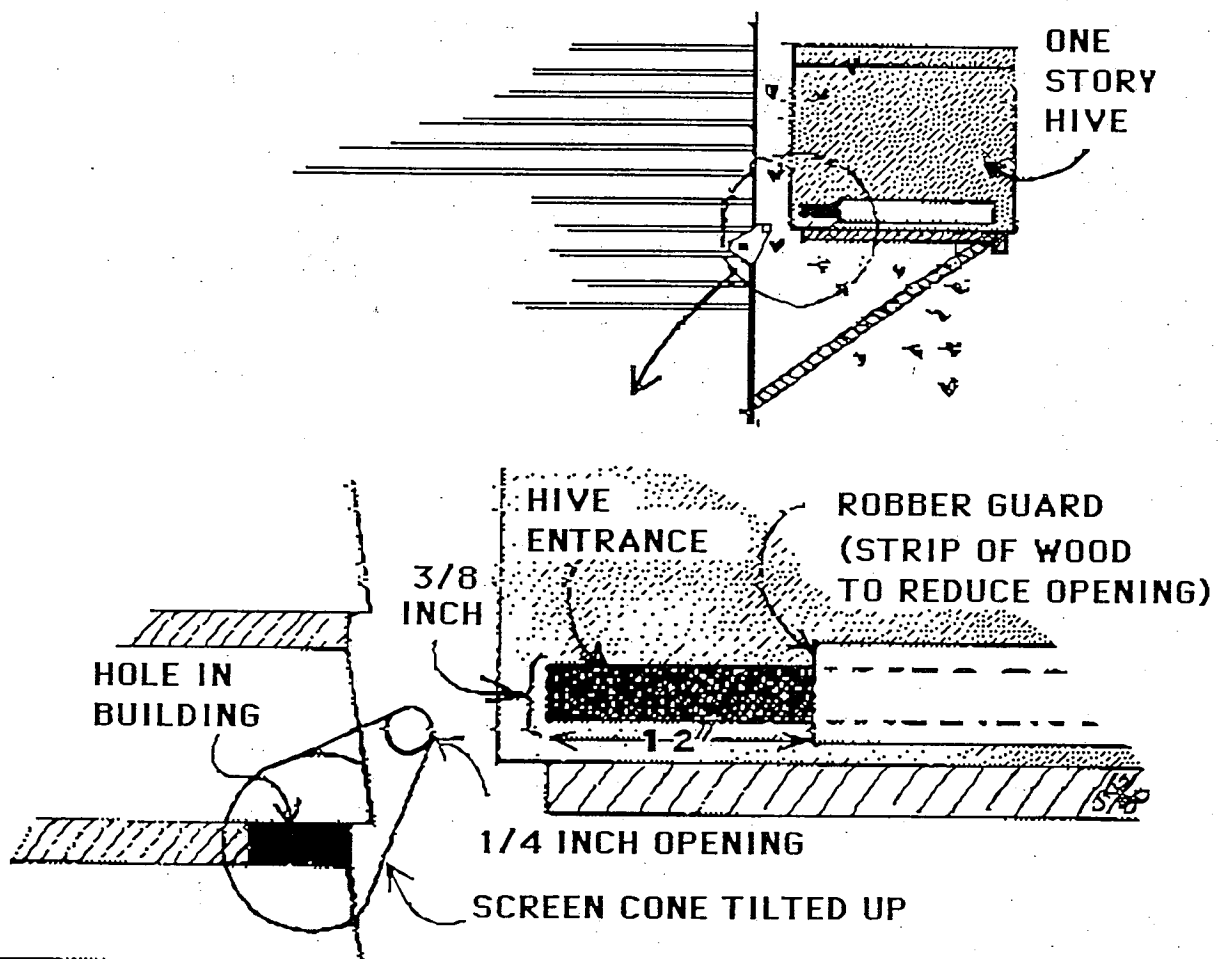
In some cases, the bees might be removed without killing them first. There are some beekeepers who perform this service. For example, a double-sided fence at a residence in Los Angeles was occupied by a large colony. A beekeeper opened up the fence, removed the queen and bees, and recovered over ten gallons of comb and honey.

If the bees are not presenting an immediate hazard, the bees can be trapped outside by placing a seeded hive near the exit hole (see University of California Cooperative Extension Leaflet #2239). Inside the seeded hive is one frame of unsealed brood with bees, one frame of honey, and frames of drawn comb. All exit holes from the hive in the building except one are plugged. A screen cone is placed over the exit hole, and the small end with a 1/4 inch opening is placed near the entrance to the box hive opening (Figure 1). The bees emerge from the

Honey Bees

screen cone, cannot find their way back in, and enter the new hive. The cone is removed after 4 weeks, and the bees will go back into the building and remove the honey, transferring it to their new hive. This still leaves comb within the walls, so all holes must be sealed to prevent other swarms from entering.

Diagram of Hive Placement



Honey Bees

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